

R E M A R K S

Claims 1-13 and 15-27 are pending in this application and stand ready for further action on the merits. Claim 1 has been amended to recite the subject matter of claim 2. Claims 2-4 have been amended to more clearly recite that each is in the process format. Claim 5 has been amended to depend from claims 1 and 27. Claim 13 has been amended to recite the subject matter of cancelled claim 14. Claims 15 and 16 have been amended to not depend upon cancelled claim 14. Support for new claim 27 can be found in the specification at page 19, lines 7-14.

No new matter has been added by way of the above amendments.

The following sections correspond to the sections of the outstanding Office Action.

Section V-VII

Applicants now comment on the unusual way in which the Examiner has treated the claims in the outstanding Office Action. The Examiner appears to have only searched for the invention as described in claim 2 and has not provided an Office Action that addresses the limitations described in claims 1 and 3-26 even though a Restriction Requirement has not been made.

Claim 2 was originally in the product-by-process format. In each of the rejections, the Examiner's analysis for patentability

of claim 2 begins by noting that claim 2 is in the product-by-process format, and based on this, the Examiner finds that all of the claims are not patentable over the prior art, since patentability is based on the product itself and the patentability of a product does not depend on its method of production. However, the Examiner has not given patentable weight to the product limitations which were present in claim 1, at the time the Examiner conducted his search. Furthermore, the Examiner has not given patentable weight to the process limitations in claim 2, which are shown and described in the present specification to give a structurally distinct product from that disclosed in the prior art.

Accordingly, Applicants respectfully request the following items:

(1) clarification as to why the Examiner has not provided an Office Action which takes into consideration the product limitations of claims 1 and 13;

(2) that the Examiner considers claims 1 and 13, which have been amended to be in the product-by-process format, to the extent of both the process limitations and the product limitations. With respect to the product limitations of claims 1 and 13, MPEP 2143.03 states that all product limitations must be considered in the analysis for obviousness under 35 USC 103. With respect to the process limitations in the product-by-process claims 1 and 13, MPEP 2113 states,

[t]he structure **implied** by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art, especially where the ... manufacturing process steps would be expected to impart **distinctive structural characteristics** to the final product. (Emphasis added).

Accordingly, the process steps in the product-by-process claims 1 and 13 should be given patentable weight when the process steps would be expected to form a product having structural characteristics which are distinct from the structure of the prior art product. Applicants will provide herein-below, technical arguments as to why the process limitations in claims 1 and 13 provide a product which is structurally distinct from the product of the prior art references. And,

(3) Applicants respectfully request that the Examiner **not** make the next Office Action final, in view of the fact that Applicants have not received proper consideration of all pending claims in the outstanding Office Action.

Structural Changes Effected By The Inventive Process Steps

The feature of the invention resides in a battery active material powder mixture for electrical double-layer capacitors prepared by placing a battery active material or a carbonaceous material for electrical double-layer capacitors and an electrically conductive powder in a mixing container, then

rotating and revolving the container so as to effect dry mixture.

The powder mixtures prepared by the operation have an orderly mixed state, as shown in Figure 1, in which the conductive substance having an average particle size of 10 nm to 10 μm adheres to the periphery of the battery active substance or the carbonaceous material for electrical double-layer capacitors.

The powder mixture having the orderly mixed state is obtained for the first time by rotating and revolving the container containing the battery active material or the carbonaceous material and the electrically conductive powder.

That is, when the conductive powder and the battery active material or the carbonaceous material are placed in the mixing container and dry mixture is carried out using a planetary mixer that subjects the mixing container to both rotation and revolution, triboelectrification between the particles being mixed causes the hitherto agglomerated conductive powder to disperse into primary particles, which then attach to the periphery of the battery active material or carbonaceous material for electrical double-layer capacitors having a large average particle size.

Moreover, in this case, the use of the conductive powder having an average particle size of 10 nm to 10 μm in combination

with the battery active material or the carbonaceous material having an average particle size, which is larger than that of the conductive powder (e.g., within a range of 1 to 100 μm) causes the relative motion of the particles to change from a volume effect proportional to the cube of the particle size to a surface area effect proportional to the square of the particle size. This allows electrostatic forces to exert a larger influence, making it easier to create the orderly mixed state of the adhesive powder.

However, this structural state of the powder mixture is difficult to describe exactly and clearly. Thus, in the present invention, the powder mixture is described in the product-by-product format.

Accordingly, since the process limitations have been shown to result in a structurally distinct powder mixture from the prior art, they should be considered for judging patentability of the invention.

Sections VIII and IX

The following rejections are pending:

- A)** Claims 1-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 02-262243 (JP '243) and Catherino (U.S. Patent 3,888,695); and
- B)** Claims 1-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Catherino and Kweon et al. (U.S. Patent 5,415,833).

Applicants respectfully traverse each of the rejections.

JP '243 describes the following matter:

The particle complex is prepared as follows. First, MnO₂ powder and the finely powdered carbon are stirred and dispersed in gaseous phase. As a result, the finely powdered carbon is absorbed on the MnO₂ particle with electrification absorption occurring by contact friction. Then, the finely powdered carbon is driven into MnO₂ and is fixed in it by performing an impact method in a high-speed air, in which powder particles come into collision strongly in a high-speed rotating air current. (Page 3, upper left column, lines 6-13).

JP '243 goes on to state:

It is impossible to fix firmly the finely powdered carbon in MnO₂ with electrification absorption only. The fixation can be achieved by using mechanical energy produced by the impact method. (Page 3, lower right column, lines 10 to 13).

Thus, the particle complex of JP '243 comprises MnO₂ powder and the carbon fine powder, wherein contact between the finely powdered carbon and MnO₂ powder is merely point contact.

One the other hand, the inventive mixture is the adhesive powder having broad surface area of contact between the battery active material and the electrically conductive powder.

Therefore, the form and working-effect of the inventive powder are quite different from that of JP '243's powder.

In addition, JP '243 teaches that the proportion of the average particle size of the carbon fine powder to MnO₂ is 10⁻¹

to 10^{-5} (described in claim 1). However, JP '243 is silent about actual particle size of both the powders.

Accordingly, significant patentable distinctions exist between the teachings of JP '243 and the inventive claims. Applicants respectfully submit that neither Catherino nor Kweon et al. cure the deficiencies of JP '243.

With regard to Catherino, the Examiner cites the example beginning at column 5, line 53, wherein cadmium metal particles of 5-10 micron average particle size are combined with CdO and Inco 255 Ni powder. The Examiner cites Kweon et al. as evidence that Inco 255 Ni powder has a particle size of 3 microns in a polyvinyl butyral binder.

Applicants respectfully submit that neither Catherino nor Kweon et al. teach or fairly suggest that the powder mixtures are prepared by placing two different kinds of particles in a mixing container, then rotating and revolving the container. As noted above, the action of using a mixing container that rotates and revolves, results in a powder mixture that is structurally distinct from the powder mixture prepared by simple mixing. In view of the structural distinctions between the inventive battery active material powder and the material of Catherino and Kweon et al., a *prima facie* case of obviousness cannot be said to exist. Accordingly, withdrawal of the rejections are respectfully requested.

Sections X - XI

The following rejections are pending:

- (a) claims 1-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gao et al. (U.S. Patent 5,972,055); and
- (b) claims 1-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barker et al. (U.S. Patent 5,910,381).

Applicants respectfully traverse each of the rejections.

The Examiner is relying upon the disclosure of Gao et al. at column 10, lines 47-55 and column 11, line 65 to column 12, line 4. In addition, the Examiner is relying upon the disclosure of Barker et al. at column 9, lines 38-45 and column 11, lines 18-25.

In each of these sections, either an anode active powder mixture or cathode active powder mixture is combined with SUPER-P carbon black and is rotated for four (4) hours in a "roller type" jar mill. It is known to those skilled in the art that the mixing container of jar mill only rotates and does not revolve.

Applicants respectfully submit that the presently claimed invention is not made obvious by Gao et al. or Barker et al., since none of these references teach or fairly suggest replacing the roller type jar mill with a mixing container that rotates and revolves.

In view of the above technical arguments, which show that there is a structural distinction in the final powder product based on the method step of mixing in a mixing container subjected to both rotation and revolution, Applicants respectfully submit that a *prima facie* case of obviousness cannot be said to exist over the cited references.

Accordingly, withdrawal of the rejections are respectfully requested.

Section XII

Claims 1-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weckesser et al. (U.S. Patent 6,489,058). Applicants respectfully traverse the rejection.

The powder mixture described in this cited patent is prepared in an air blender, which is an apparatus for blending particles by air current introduced in a container. It is known in the art that the container does not rotate and revolve.

Therefore, the resulting powder mixture of Weckesser et al. does not have the orderly mixed state of the inventive powder mixture.

Moreover, Weckesser et al. are silent with respect to an average particle size.

In view of the fact that Weckesser et al. are silent with respect to the use of a mixing container subjected to both

rotation and revolution, and the average particle size, a *prima facie* case of obviousness cannot be said to exist. As such, withdrawal of the rejection is respectfully requested.

Conclusion

In view of the above amendments and comments, Applicants respectfully submit that the claims are in condition for allowance. A notice to such effect is earnestly solicited.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact **Garth M. Dahlen, Ph.D., Esq.** (Reg. No. 43,575) at the telephone number of the undersigned below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any

overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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